

## CLAIMS

1.  
Apparatus for providing a seal between first and second relatively rotatable parts of  
5 a mechanism used in an environment comprising pulverulent material entrained in a  
fluid, the apparatus comprising a first element and a second element between which  
an annular passage is defined when the first element is mounted on one said part of  
the mechanism and the second element is mounted on the other said part of the  
mechanism and the one part is rotated with respect to the other, CHARACTERISED  
10 IN THAT the annular passage is defined by interfacing surfaces of the respective  
elements between which there is clearance and on which, when the mechanism is in  
use, pulverulent material entrained in the fluid which enters the annular passage can  
be deposited in layers which substantially restrict flow of the fluid through the annular  
passage.
- 15 2.  
Apparatus according to claim 1, CHARACTERISED IN THAT the layers build up to  
form a labyrinthine passage between the layers having a width which is substantially  
smaller than the clearance between the interfacing surfaces.
- 20 3.  
Apparatus according to claim 1 or claim 2, CHARACTERISED IN THAT one of the  
elements is provided with an annular projection which in use projects into an annular  
recess formed in the other element, the annular projection embodying at least part of  
25 a first of the interfacing surfaces and the annular recess embodying at least part of a  
second of the interfacing surfaces.
4.  
Apparatus according to any one of claims 1 to 3, CHARACTERISED IN THAT th  
30 ratio of the minimum value of the clearance between the interfacing surfaces to th  
minimum diameter of the annular passage is not substantially less than 1:150.

5.

Apparatus according to any one of claims 1 to 4, CHARACTERISED IN THAT the ratio of the length of the annular passage to the minimum diameter of the annular passage is not substantially less than 1:2.

6.

Apparatus according to any one of claims 1 to 5, CHARACTERISED IN THAT the ratio of the width of the widest of the interfacing surfaces to the minimum diameter of the annular passage is not substantially less than 1:20.

7.

Apparatus according to any one of claims 1 to 6, CHARACTERISED IN THAT the fluid is a gas.

8.

Apparatus according to any one of claims 1 to 6, CHARACTERISED IN THAT the fluid is a liquid

9.

Apparatus according to any one of claims 1 to 8, CHARACTERISED IN THAT the minimum value of the clearance between the interfacing surfaces is not substantially less than 0.4 mm.

10.

Apparatus according to any one of claims 1 to 9, in which a first member is provided which is located in the annular passage and which is constructed of material which is more susceptible to wear than the material of which the interfacing surfaces of the elements are constructed, there being clearance between the first member and the interfacing surfaces so that the first member is able to move both radially and axially in the annular passage.

11.

Apparatus according to any one of claims 1 to 10, in which second and third

members are provided which are located in the annular passage and which are constructed of material which is more susceptible to wear than the material of which the interfacing surfaces of the elements are constructed, the second member being seated on the stator and the third member being seated on the rotor so as to rotate therewith with respect to the second member, there being clearance between the second member and the third member so that the third member is able to move radially with respect to the second member when the rotor rotates.

12.

*Sp*  
*12*  
A method of providing a seal between first and second relatively rotatable parts of a mechanism used in an environment comprising pulverulent material entrained in a fluid, including the steps of providing a seal comprising a first element and a second element between which an annular passage is defined when the first element is mounted on one said part of the mechanism and the second element is mounted on the other said part of the mechanism and the one part is rotated with respect to the other, CHARACTERISED IN THAT the annular passage is defined by interfacing surfaces of the respective elements between which there is clearance and on which, when the mechanism is in use, pulverulent material entrained in the fluid which enters the annular passage is deposited in layers which substantially restrict flow of the fluid through the annular passage.

*add*  
*A3*

*Add*  
*B4*